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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/695,949	10/30/2003	Steve Crane	7370/80860	6252

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WASHINGTON, DC 20036

EXAMINER
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DANIELS, MATTHEW J

ART UNIT	PAPER NUMBER
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1732

MAIL DATE	DELIVERY MODE
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05/14/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding..**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/695,949	<b>Applicant(s)</b> CRANE ET AL.	
	<b>Examiner</b> Matthew J. Daniels	<b>Art Unit</b> 1732	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 09 February 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1, 10 and 21-38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 10 and 21-38 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>10/30/03</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election of Group II, claims 21-38 in the reply filed on 9 February 2007 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)). Claims 1 and 10 are withdrawn as being drawn to a nonelected invention. No species restriction was made in the restriction requirement.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 21, 26-32, 34, and 35** are rejected under 35 U.S.C. 103(a) as being unpatentable over Pinney (USPN 3985300) in view of Hynes (USPN 1245233). **As to Claim 21**, Pinney teaches the basic claimed apparatus that could be used to inject a flowable substance comprising:

A housing (everything between items 19 and 13 in Fig. 3) including a chamber (everything between items 13, 11, and 12 in Fig. 3) defined within at least a portion of the housing, the chamber having a supply port (2:55), a purge port (2:47), and an outlet (Fig. 3, item 13);

An injection spindle slidably retained within the chamber between an ejection position and deployed position (Figs. 1 and 2);

Pinney clearly teaches that the valve stem (equivalent to the spindle) is controlled by known means (2:29). Thus, Pinney suggests that control means for producing the movement of item 20 is conventional. However, Pinney is silent to an actuator, and that the actuator is connected to the housing. Hynes teaches an actuator (item 39, Fig. 3) connected to the housing (see screw, item 44, Fig. 3). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the actuator of Hynes into the device of Pinney because (a) Pinney suggests that a known control means should be used (2:29-30), and the solenoid of Hynes is a known and conventional control means, and (b) the actuator of Hynes would electrically regulate flow, which would be desirable in the device of Pinney.

**As to Claims 26 and 27**, the combination of Hynes with Pinney provides the actuator of Hynes, namely a solenoid (page 2, left col., lines 29-33) at an end of a housing opposed to the outlet (Fig. 1) to the device of Pinney. Pinney further teaches two ports, (items 11 and 12 in Figs. 1-3). While Pinney appears to teach that the purge port is disposed closer to the outlet and the supply port disposed between the purge port and the actuating end of the device, either of the ports of Pinney (items 11 and 12) could be used as a supply port or a purge port. Thus, the particular configuration of ports (one port adjacent the outlet and one port adjacent the actuator) is provided by the combination. The limitations drawn to the supply port and purge port are drawn to the intended use of the resulting article. In the alternative, Hynes teaches a supply port (Fig. 3, item 12), a port that is interpreted to be a purge port (Fig. 3, item 28), and an outlet (Fig. 3, item 25), suggesting that arrangement or reversal of ports in the manner claimed is also

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known. **As to Claim 28**, the injection spindle of Pinney has a variable cross section which forms passages (Fig. 3, item 14). **As to Claims 29-32 and 34**, Pinney teaches a plug, which could be removed from the chamber. However, Pinney is silent to the releasability of the plug, and the subject matter of Claims 30, 31, 32, and 34. However, Hynes teaches that it is known to provide a removable plug (Fig. 3, item 33) disposed at an end of the spindle in its extended position (Fig. 3, item 39 is extended), the spindle having an end shaped to complement the plug (see threads on item 35, Fig. 3), the plug being slidably retained within the chamber and positioned at the outlet when the spindle is in its extended or deployed position (as shown in Fig. 3). The removable plug of Hynes is a disk shaped object. It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the apparatus of Hynes into that of Pinney in order to allow for replacement of the plug when it becomes worn or damaged without replacement of the entire spindle of Pinney. **As to Claim 35**, the disc-shaped element surrounding the outlet (Fig. 2, item 13) of Pinney is interpreted to be a seal disposed at the outlet of the chamber. Alternatively, the tapered portion (15, Fig. 2) is interpreted to be a seal disposed at the outlet of the chamber because it is matched to the shape of item 21.

3. **Claims 22-24** are rejected under 35 U.S.C. 103(a) as being unpatentable over Pinney (USPN 3985300) in view of Hynes (USPN 1245233), and further in view of Gaubatz (USPN 2806075). Pinney and Hynes teach the subject matter of Claim 21 above under 35 USC 103(a). **As to Claims 22-24**, Pinney is silent to the claimed fastener which includes a threaded collar and a locking groove and flange. However, Pinney teaches that the device is designed to fit in a thermocouple hole (3:1-10). Gaubatz teaches that thermocouples are desirably provided with

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fasteners at their distal end, the fastener including both a threaded collar (Fig. 2, item 24) and locking groove and flange (Fig. 2, item 111). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the fasteners of Gaubatz into the apparatus of Pinney because it would require only one nut, as opposed to Pinney's multiple bolts (item 19), which would increase the speed of assembly or disassembly.

4. **Claims 25 and 37** are rejected under 35 U.S.C. 103(a) as being unpatentable over Pinney (USPN 3985300) in view of Hynes (USPN 1245233), and further in view of Eberhart (USPN 3695149). Pinney and Hynes teach the subject matter of Claim 29 above under 35 USC 103(a). **As to Claims 25 and 37**, Pinney teaches that item 22 (Figs. 1 and 2) slides within the chamber (Figs. 1 and 2), but Pinney is silent to a tube formed from low friction material retained within housing and the injection spindle having a low friction surface. However, Eberhart teaches that for reciprocating members operating under adverse conditions (Abstract), it is known to provide a coating, which is also interpreted to be a tube, of low friction material to the inside surface of a chamber (Fig. 2, item 30) or to the surface of the ram or spindle (Fig. 1, items 20, 22, 26, 44). Additionally, Eberhart teaches sleeve bushing (Fig. 3, item 36), which is also interpreted to be a tube of low friction material. It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the apparatus of Eberhart into that of Pinney in order to reduce the friction between the sliding surfaces.

5. **Claim 33** is rejected under 35 U.S.C. 103(a) as being unpatentable over Pinney (USPN 3985300) in view of Hynes (USPN 1245233), and further in view of Barber (USPN 3015227).

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Pinney and Hynes teach the subject matter of Claim 29 above under 35 USC 103(a). **As to Claim 33**, Pinney and Hynes are silent to the sphere. However, spherical sealing elements are known from Barber, who teaches a sealing element in the shape of a sphere (Fig. 2, item 27) regulating flow between three ports (items 23, 32, 26). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the apparatus of Barber, namely the spherical plug, into the apparatus of Pinney (a) because Barber teaches that tapered plugs (Fig. 2, item 38), such as that shown by Pinney (Fig. 1, item 15), are used interchangeably with spherical plugs (Fig. 2, item 27), and (b) the spherical plug would provide a better seating action than the tapered plug of Pinney.

6. **Claim 36** is rejected under 35 U.S.C. 103(a) as being unpatentable over Pinney (USPN 3985300) in view of Hynes (USPN 1245233), and further in view of Stoss (USPN 4741364). Pinney and Hynes teach the subject matter of Claim 29 above under 35 USC 103(a). **As to Claim 36**, Pinney is silent to the tube having the tube retained within the chamber having a corresponding supply port and purge port, and the edge at the outlet with a seal retained in the engaging formation. However, Stoss teaches a valve similar to that of Pinney, but including a tube (Fig. 2) which sits outside the spindle (Fig. 3) and within the chamber (Fig. 1, item 10) having corresponding ports for each of the ports within the chamber (see Fig. 1, items 24/48, items 20/50, and items 18/46, also 2:37-47). Stoss further teaches the tube including an edge at an outlet with an engaging formation and a seal retained within the engaging formation (Fig. 1, see o-ring below item 42 in the lower left of the chamber). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the sleeve of

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Stoss into the apparatus of Pinney in order to supply full system pressure and compensate for changes in material (Stoss, 1:10-20) because the sleeve of Stoss provides a pressure distribution effect that improves stability.

7. **Claim 38** is rejected under 35 U.S.C. 103(a) as being unpatentable over Pinney (USPN 3985300) in view of Hynes (USPN 1245233), and Alanko (USPN 5665301). **As to Claim 38**, Pinney teaches an apparatus comprising an injection head (Fig. 1) releasably connected (Fig. 1, item 19) to an injection port capable of injecting a flowable substance into a closed mold, including a housing (everything between items 19 and 13 in Fig. 3) with a chamber (everything between items 13, 11, and 12 in Fig. 3) having a supply port (2:55), a purge port (2:47), and an outlet (Fig. 3, item 13), and an injection spindle slidably retained within the chamber between an ejection position and deployed position (Figs. 1 and 2);

Pinney is silent to (a) the base mold, soft tool formed as a sheet having an outer edge, a seal formed at the outer edge and connected in sealing arrangement with a base mold to form a closed mold, a vacuum channel formed at the outer edge of the sheet and spaced inwardly of the seal, and at least one injection port disposed in the sheet, and (b) an actuator.

However, these aspects of the invention would have been prima facie obvious for the following reasons:

a) Alanko teaches the base mold (Fig. 1, item 1), soft tool formed as a sheet having an outer edge (Fig. 1, item 3), a seal formed at the outer edge (Fig. 1, items 6, 7) and connected in sealing arrangement with a base mold to form a closed mold (Fig. 2), a vacuum channel formed at the



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outer edge of the sheet and spaced inwardly of the seal (Fig. 1, item 8, 10), and at least one injection port disposed in the sheet (Fig. 1, item 9).

b) Pinney clearly teaches that the valve stem (equivalent to the spindle) is controlled by known means (2:29). Thus, Pinney suggests that control means for producing the movement of item 20 is conventional. However, Pinney is silent to an actuator, and that the actuator is connected to the housing. Hynes teaches an actuator (item 39, Fig. 3) connected to the housing (see screw, item 44, Fig. 3).

It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the apparatus of Alanko and the apparatus of Hynes because (a) it would be desirable to use Pinney's injection valve to inject into a chamber or mold, such as that of Alanko, particularly in view of Pinney's suggestion to inject into a polymerization vessel (1:9) and (b) Pinney suggests that a known control means should be used (2:29-30), and the solenoid of Hynes is a known and conventional control means, and the actuator of Hynes would electrically regulate flow, which would be desirable in the device of Pinney.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew J. Daniels whose telephone number is (571) 272-2450. The examiner can normally be reached on Monday - Friday, 8:00 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on (571) 272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to read 'Matthew J. Daniels', with a stylized flourish at the end.

Matthew J. Daniels

A.U. 1732

10 May 2007